



# The Army's First ADAM Cell

by Captain Scott L. Mace

As the Army transitions to the fighting force of tomorrow, it is creating different types of sections within its brigades. This produced the Air Defense Airspace Management (ADAM) Cell in the new Stryker Brigade Combat Team (SBCT). The ADAM Cell consists of six personnel, and is the only organic air defense element in the SBCT. There are no air and missile defense fire units or radars organic to the SBCT. The ADAM Cell is part of the SBCT main tactical operations center (TOC) and is a critical link to the maneuver commander in the new lighter and more lethal brigade combat team. Overall, the ADAM Cell has brought to the fight a wide array of systems that will drastically change the way a brigade sees its air picture on the battlefield. This is a huge step from the days of forward area alerting radar and calling out grid squares and directions for the brigade's early warning. This article is an overview of the first of six SBCTs that the Army will stand up. It also explains how the ADAM shelter is integrated into the SBCT TOC, how to setup the shelter, and the types of systems and radios used.

The ADAM Cell is part of the SBCT TOC. It is configured on the back of an

M1113 heavy chassis HMMWV that has a stronger load capacity than the normal HMMWV. This configuration allows for vehicle ease of operation and has the ability to carry more weight and increased power when pulling heavier loads. It also is a nuclear, biological, and chemical-capable rigid wall shelter (RWS), with power connections along both sides to allow local area network (LAN) connections and antenna inputs from a myriad of required antennas. The cell's location in the TOC allows for quick and easy communication with other cells.

In addition to the shelter, the ADAM Cell's equipment consists of a standard M1097 HMMWV support vehicle, a 10-kilowatt generator, and a high-mobility trailer (HMT) that can carry a 1¼-ton load. These vehicles carry the cell staff and extra equipment. The staff includes an air defense captain as the ADAM officer in charge, an aviation captain, a warrant officer systems integrator, an E-6 air defense early warning systems operator, an E-5 air defense early warning systems operator, and an E-7 for aviation operations.

The biggest change as you look at the ADAM Cell is the technology jump that has been accomplished. There are four

computer systems that monitor the overall air picture of the SBCT area of responsibility and the theater of operations in which the SBCT may operate. There are also 12 radio systems that provide the cell with a complete array of redundant communications capabilities as they establish and maintain the air picture.

The shelter is laid out in a very user-friendly design, making it easy for the staff to move around inside the tent area to observe various operating systems. In this particular ADAM shelter, we share the space with the Air Force liaison officer (ALO). Next to the ADAM shelter is the fire and effects coordination cell (FECC). This means that all of the airspace users are collocated for immediate airspace management and synchronization. The ALO can report inbound friendly aircraft and the FECC section can request airspace clearance quickly and with minimum time lost.

The Tactical Airspace Integration System (TAIS), one of four processors within the ADAM Cell, provides the ability to manage airspace deconfliction. This is done in a matter of seconds as opposed to minutes. For example, this system can be used in conjunction with a fire mission from a field artillery unit to reroute

aircraft through a different corridor and prevent losses to friendly fire. A request comes to the cell and the TAIS operator generates a 3-dimensional picture of the airspace and knows within a matter of seconds if there is any conflict with friendly air. This powerful machine does all of the work for the operator. The TAIS will also receive a text message copy of the airspace coordination order (ACO) from the higher Air Force Air Operations Center or the Army's Battlefield Coordination Detachment, then convert the ACO into a graphic format, and display it on the flat screen. This precludes the operator from manually inputting the airspace control measures onto the map overlays. An operation that took several man-hours to complete, now takes seconds.

The Air Defense System Integrator provides three functions to the cell. First, it provides routing capabilities to support tactical digital data links (TADIL) A, B, and J. It also provides the capability to receive intelligence information from the Integrated Broadcast System (IBS), specifically from the Tactical Information Broadcast System and the Tactical Data Dissemination System. Finally, it also provides a set of command and control functions to the crew of the ADAM Cell.

A standard forward area air defense (FAAD) command and control (C2) processor also provides the cell the ability to manage air defense engagements and early warning. Specifically, it provides the Army's FAAD datalink (sentinel radar picture), and controls the air and missile defense engagement operations. The fourth processor is the Air and Missile Defense Work Station (AMDWS). The AMDWS is one of the original five Army Battlefield Command Systems. It provides the air and missile defense force planning and operations for the ADAM Cell.

There are several radio systems in the ADAM shelter that add a high degree of communications ability. First, are the vehicle radio communication (VRC)-92 and the VRC-90 single channel and ground airborne radio system (SINGARS) advanced system improvement program (ASIP) radios that provide voice communications throughout the SBCT for C2. These radios also provide the datalink between the ADAM Cell and the sentinel radar section for the FAAD datalink (FDL) picture. The PSC-5 radio provides both voice and data C2 in the ultra-high frequency satellite band. This is primarily for SBCT operations and intelligence, and specifically allows the SBCT to re-

ceive tactical ballistic missile (TBM) alerts. The Harris 150 radio system (voice) is primarily used to support the aviation battalion flight operations net. The MacKay radio system (high-frequency data) is used to gain access to the TADIL-A link. The VRC-103 will be used as an aviation battalion flight operations radio, operating in multiple band frequencies in high frequency and ultra-high frequency (UHF) bands.

The Joint Tactical Terminal (JTT), operating in the UHF band, provides access to the IBS for the receipt of satellite intelligence and targeting information. The Joint Tactical Information Data System (JTIDS) provides the shelter with access to the TADIL-J network for air tracks while operating in the UHF band. The LST-5 radio operates in the UHF satellite band to provide access to the TADIL-A network for air tracks. An enhanced positioning locating and reporting system (EPLRS) radio that operates in the UHF band, can communicate with the air defense network.

The redundancy of the shelter is apparent with all the radio and computer systems that are operating in the cell. This provides the cell with the ability to use alternate means to provide support to the maneuver commander.

There is also an internet communication device (*Access Net*) in the TOC that allows for easy and efficient information flow. It is a very user-friendly device that can be programmed within a few minutes to monitor any net. It controls all of the radio systems in the ADAM Cell. It is easy to monitor one net or many nets using the touch screen device to navigate between the systems. You can push a button and switch from radio to radio without leaving the workstation. This includes monitoring and communicating on the high frequency, satellite communication (SATCOM), and SINGARS ASIP radios. The headphones that are used with *Access Net* have noise canceling technology, which allows the user to communicate without noise interference.

There are also many small things that provide for increased operating potential; for instance, there is a color printer mounted inside of the shelter. During the I Corps Warfighter 02 exercise at Fort Lewis, Washington, the cell could quickly print out an enemy air chart to identify a potential airstrip or landing zone to the S2, or use the chart to brief the brigade commander.

There are extra ports on the network hub to plug in a laptop. This allows the AMDWS user to take a snap shot of the



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screen, which the cell can access the AMDWS through the laptop, retrieve the snapshot, and put it into a slide without the AMDWS user having to take the time to do the operation. This allows for easier updates of information during the battle update brief to the brigade commander. The ability to insert a picture into the update brief helps explain enemy rotary, fixed-wing, unmanned aerial vehicle, and TBM activities. There is also the ability to push the AMDWS screen to the brigade commander's screen and allow the commander to see the same screen the AMDWS operator is viewing.

According to Colonel Michael Rounds, 3d Brigade commander for the Army's first Stryker Brigade, the ADAM Cell has four primary tasks in support of SBCT operations. First, is providing the brigade with a "clear picture of both the friendly and hostile aircraft." "Having sentinel radars in the SBCT..." to do this mission is critical as it helps us to see ourselves "from within," as we fight with our own lift and transport aircraft. Second, is the ability to integrate analog air defense units into our digital operations. In the near term, most SBCT air defense augmentation will be from analog units. Our ability to "plug" an analog unit into the brigade was demonstrated during the recent I Corps Warfighter 02.

The 111th ADA from New Mexico, a National Guard Patriot unit, successfully

communicated with the SBCT through an I Corp-provided digital bridge. The ADAM Cell was able to combine the air defense priorities of the SBCT with the capabilities of the 111th to ensure proper air defense coverage for the SBCT. A third expectation of the ADAM Cell is to participate in the "parallel and collaborative planning process..." with both higher and lower echelons of command. The ADAM Cell "is the subject matter expert..." and has to coordinate a common ADA posture in the SBCT. Finally, the overall management of Army airspace command and control (A2C2) for the SBCT is a very important mission of the ADAM Cell.

When asked if there were any issues with the ADAM Cell in the SBCT, Rounds said he would like, "...to have organic sentinel radars in the SBCT." It only adds to his overall air picture. He continued by saying that augmentation of air defense assets from other units would need to be wheeled assets to maintain "functionality and speed" of the SBCT. He would like to see Strykers with stinger teams in the SBCT or infantry squads that carry stingers with them. This would increase the SBCT's effectiveness against potential air defense threats. In closing, Rounds stated that the ADAM Cell is a valuable asset to the brigade.

Overall, the ADAM Cell is a significant addition to the SBCT. It adds a new di-

mension to the air defense mission in an ever-changing threat environment. The multifunctional abilities of the ADAM Cell allow for greater flexibility to support the SBCT throughout its diverse mission profile. This cell in the SBCT provides the capability to receive air pictures from all branches of service, and from some of our allies as they produce a picture.

From the U.S. Navy's Aegis cruiser, to the U.S. Army's Patriot missile system, and AWACS aircraft flying overhead, the ADAM Cell provides large amounts of information never before available to the brigade commander. As we continue to transform into a lighter and more lethal force, air defense must continue to change its way of doing business to be effective in the future.



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